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INDUSTRY 1942

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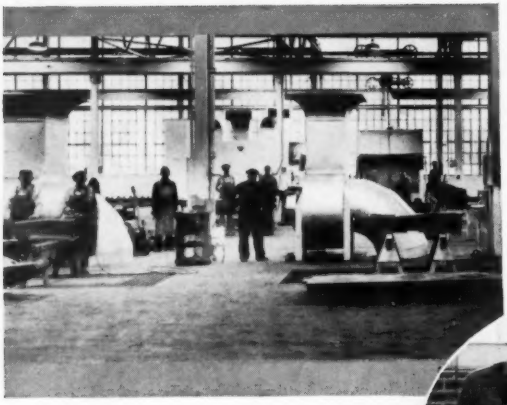

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PACKAGED Foot Safety means:

1. We stock our famous Fitmaster Safety Shoes for your plant in our Thom McAn retail stores—without cost or obligation to you.
2. Your workmen will buy the first pair without pressure on your part, because they already know and trust the Thom McAn name.*
3. Designed upon findings of a patented research device, fitted in our stores by our own trained fitters, Thom McAn Fitmaster Safety Shoes give proper fit, genuine comfort—we guarantee it.
4. Your workmen will continue to wear Fitmasters because they look better, feel better, cost them less than other brands.

Write: THOM McAN—SAFETY SHOE DIVISION—25 WEST 43RD STREET, NEW YORK, N. Y.

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H. B. Duffus Made Safety Engineer at Westinghouse

Henry B. Duffus, former supervisor of safety and plant protection at the Westinghouse East Springfield, Mass., Works, has been appointed mechanical safety engineer in the headquarters medical department at East Pittsburgh, it was announced by Dr. T. Lyle Hazlett, medical director of the Westinghouse Electric & Manufacturing Company.

Mr. Duffus' duties will include safety work at the 24 plants and 33 district manufacturing and repair departments of Westinghouse throughout the country. One of his chief responsibilities will be the continued development of safety devices installed in machines to protect the operators.

Mr. Duffus is vice chairman of the automotive and machine shop section of the National Safety Council and former editor of the news letter of that section. He also is a special agent of the Department of Labor's National Committee for Conservation of Man Power in Defense Industries.

Born in Perth, Scotland, September 29, 1897, Mr. Duffus came to the United States in 1913, started working in a Ludlow, Mass., factory and attending night school. During the first World War he served with the artillery of the British Army from 1916 to 1919. When the Armistice was signed Mr. Duffus returned to America and enrolled in the Bliss Electrical School at Washington, D.C., graduated in 1923. The same year he joined Westinghouse, taking a job in the test department at

the East Springfield Works. Within two years he had been promoted to assistant foreman of the fan motor test department. In 1927 Mr. Duffus became supervisor of inspections and tests at the Company's radio division then located at Chicopee Falls, Mass.

Fourth Annual Congress on Industrial Health

Arrangements have been largely completed for the fourth annual Congress on Industrial Health sponsored by the American Medical Association, which will be held

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LAST YEAR?

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Learn what operations or causes produced last year's accidents. Then consult Pulmosan for the proven safeguard to protect these

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in Monday and Tuesday, January 12-13, 1942, at the Palmer House in Chicago. These meetings are open to physicians and others interested in industrial health. There is no registration fee. Topics are as follows:

Tuberculosis in Industry—A Résumé.
The Physiology of Work.
Medical Aspects of Vocational and Industrial Training.
A Dental Program for Industry.
Industrial Dermatoses.
A report by the Committee on Industrial Dermatology, Section on Dermatology and Syphilology, American Medical Association.
The Panel System in Workmen's Compensation Administration.
Mass X-Ray Surveys—Evaluation of Technics and Equipment.
Use of Visiting Nurses in Industry.
Progress in Official Agencies.
Postgraduate Education in Industrial Health.
Conservation of Manpower in Connecticut.
Health Education for Industrial Workers.
Lecture on Traumatic Surgery.
Industrial Ophthalmology.
Placement of the Worker in Industry.
Conservation of Hearing in Industry.
Recent Trends in Physical Examinations Under Civil Service.
Vitamin Administration in Industry.
Medical Service Plans for Small Industry.

AMERICAN DEFENSE *hinges on the continued operation of hundreds of industries where the slightest spark may cause disastrous fires or explosions, resulting in complete stoppage of work and even great loss of life. The deadliest saboteur in this type of plant is the ordinary steel-nailed workman's shoe . . because it kicks up tiny, unseen sparks at almost every step!* ***To eliminate this hazard completely,*** *Lehigh has developed this* ***SPARK-PROOF*** *safety shoe, already widely used in chemical industries, munitions plants, refineries and many industrial departments where fire or explosion is an ever-present risk. The cost of this complete protection is "peanuts" compared to the hazard.* ***WRITE FOR PRICES NOW!***

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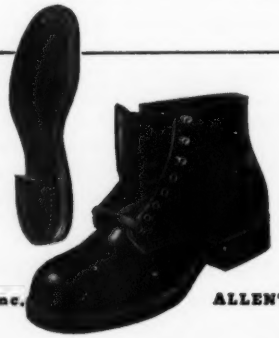

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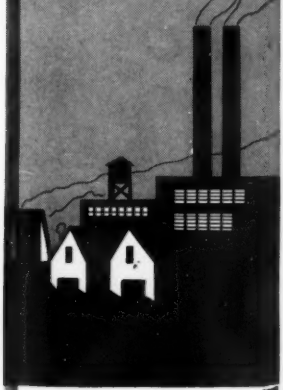

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OCCUPATIONAL Hazards

JANUARY 1942

VOLUME 4 NUMBER 4

CONTENTS

Page

LITERATURE LIBRARY 28
Reduce employee exposures, get latest literature.

Training Safety Engineers for Defense 6
Here is an opportunity for embryonic safety engineers in your organization to get advanced safety training—a very important activity.

Lockheed Uses Electric Eye 9
Shearing operation is automatically controlled by an electric eye.

Importance of Industrial Disease Control to Women Workers .. 10
Types of exposure women in industry face, requirements for special protection, recommended procedures for regular work are discussed in this article.

How to Prevent Strains and Sprains 14
A practical word and picture presentation on the prevention of strains and sprains.

Right Off the Docket 18
An unusual case this month deals with employee receiving award as result of ill fitting safety shoes.

Cleaning of Hands and Arms 20
First of a series in which the problem of cleaning hands will be reviewed.

Directing Young Workers into Safe Employment 23
The Children's Bureau has established hazardous occupations orders in woodworking jobs, motor vehicle drivers, and logging and sawmilling occupations.

Fatigue in Industry 26
8 rules for fatigue reduction are detailed.

TRAINING SAFETY

EMPLOYEES having special skills and experience are difficult to replace at any time. It is particularly hard to replace them whenever rising production demands a rapid expansion of the working force. For this reason, if no other, the conservation of life and limb is a first essential to national defense. Not only do accidents represent a "bottleneck" to speedy production, but they may also be a potent factor in undermining national morale.

Purpose

The underlying purpose of the Safety Engineering Defense Training courses being proposed by the National Committee for the Conservation of Manpower in Defense Industries through the engineering colleges over the Nation, is to assist defense industries by training key supervisory employees who have the responsibility for maintaining the safety, health, and efficiency of the persons employed. This specialized Safety Enginering Defense Training provides the knowledge and skills needed by the supervisor who in turn imparts to each worker those safe practices and procedures needed to keep the worker safe on the job.

The problems of safety in national defense are in a major degree problems of techniques, and training in these techniques is one of the most pressing needs for meeting these problems. Problems of training during an emergency do not differ essentially from those of normal times. They merely are more urgent and involve more people.

Production workers and supervisors are normally trained on the job. With the training of large numbers of defense workers, however, a logical medium exists in the engineering college for the training of key industrial personnel. The college or university has a logical, perhaps imperative, role of participation in safety activity. This is particularly true of the recognized engineering colleges that are today receiving Federal funds through the U. S. Office of Education to

ENGINEERS For Defense

BY LAURENCE B. TIPTON—SAFETY TRAINING SUPERVISOR
U. S. DEPARTMENT OF LABOR

Defense production is placing an unprecedented demand on trained safety personnel. How our government is handling this problem? Where training can be received? Full details are reviewed.

pay the cost of short, intensive training courses of college grade designed to meet the shortage of engineers with specialized training in fields essential to the national defense.

Colleges Help

During the past year the vital part the university and college can play in industrial training has come to be recognized more clearly by industry. Through the Engineering Defense Training program of the U. S. Office of Education thousands of workers essential to defense production have been trained.

In Safety Engineering Defense Training we have an outstanding example of how a program of cooperation between the college and industry can be developed. There are several important agencies representing these interests that have essential contributions to make in the execution of this program.

Agencies Co-operating

Prominent among these agencies is the Engineering, Science and Management Defense Training Program of the U. S. Office of Education whose staff is actively cooperating in this project. Suggested course outlines, with supplementary material, have been prepared for the guidance of institutions giving these courses and all of the 22 Engineering, Science, and Management Defense Training Program Regional Engineering Advisers have accepted invitations from the National Committee for the Conservation of Manpower in Defense Industries to serve as Regional Educational Advisers to the regional and local representatives of the National Committee. The local safety councils have taken a prominent part in promoting attendance at these classes, and practical safety engineers have been drawn from the membership of the American Society of Safety Engineers to serve as instructors.

170 Classes

It is gratifying to note that the need for instruction in Safety En-

gineering has been recognized by practically every college of engineering located in the industrial defense areas of the Nation. At the present time, there are 57 such institutions offering approximately 170 classes, with an approximate total attendance of over 5,000 key supervisory employees. The National Committee for the Conservation of Manpower in Defense Industries is hopeful through these courses to train all the key men from defense industries, who in turn can go back to their plants and train thousands of other men on the job in safe practices and procedures.

For details regarding the location of the training center in your vicinity write to the Editor, OCCUPATIONAL HAZARDS.

Sabotage Precaution

Rallying key men from its regular plant personnel for protection against possible acts of sabotage, Reliance Electric & Engineering Company, Cleveland, Ohio, has answered pleas of national and local authorities for extra vigilance at defense plants with the organition of an 86-man fire brigade.

A course of instruction has already been launched at the plant under the direction of a battalion chief of a nearby engine company of the Cleveland Fire Department.

Dual Firefighters

The plant, which now has more than 1,100 employees, has been organized by departments for the fire protection work. All of the members of the fire fighting force have been provided with a red overseas-type of cap. This means of identification makes it possible to learn their whereabouts instantly in a department in an emergency.

If you think

ATHLETE'S FOOT

can't be prevented in your shower rooms.

Maybe you have tried, hopelessly, to control this infection that impairs the efficiency of so many of your employees (see U. S. Public Health Bulletin E-572 B and R-674). Maybe you have tried every conceivable way to solve it and without result.

Then try the NEW way

Recent research has upset former theories on prevention of Athlete's Foot. The new procedure is revolutionary—the ONOX method. A safe non-poisonous skin toughener does the work. Employees like it! You may test it under any conditions you choose to impose and without obligation. For example:

- ***We will ship prepaid, your trial order for any amount of ONOX and equipment. Use it for 60 days. If at the end of that time ONOX has not proved itself to your complete satisfaction (100%) you owe us nothing and return nothing. This offer is open at any time to established industrials.***

We would like to send you the details of the simple ONOX method. Used by hundreds of industrials from Coast to Coast.

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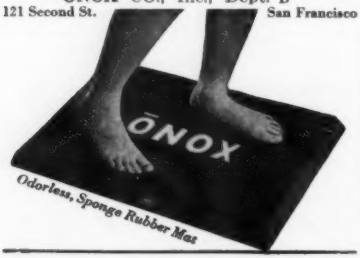


Electric eye keeps shears from cutting operator's hands.

Lockheed Uses Electric Eye for Safety

By JACK F. HATTON, Safety Engineer, Lockheed Aircraft Corp., Burbank, California

DURING these days of keyed up production, it has become necessary for some of the employees to occasionally work behind a power driven square shear for the purpose of removing the finished sheared stock or, in some cases, to feed sheet stock into the shear from the rear because of the excess lengths involved and the placement of the gauge stops.

We were able to provide a satisfactory point of operation barrier guard protecting the operators at the front of the shear. However, the exposure at the rear had to be overcome. As a consequence, an electric eye was installed at the rear of the shear which protects the shear helpers by rendering the shear inoperative when for any reason the employee's hand or arm enters the danger zone travelled by the knives.

Why Industrial Disease Control is Important to Women Workers

By MARGARET T. METTERT

Increasing need for women workers in industry requires additional precautions for their health and comfort. Here are some hints.

SUCCESSFUL employment of women through the period of expanding production calls for all possible protection from the effects of harmful substances, gases, dusts, and fumes. The tremendous growth of new chemical processes in industry, increased turnover of employees, and rapid expansion of defense industries brings serious problems for keeping up with the growth of health hazards.

OEM defense photo

Women are busy making uniforms for the armed forces.

The problem of industrial diseases among women received public nation-wide attention about 1928 when the unfortunate New Jersey women clock and watch dial painters were found sentenced to death by radium poisoning. One result of the tragedy was establishment of precautions against exposure of workers in that industry. We have the opportunity now to control the industrial environment so that such tragedies need not occur. Constant alertness and planning can prevent great increase in the annual loss of life and health from occupational diseases.

Require Special Protection

There is no question that there is a sex variant in illness. The National Institute of Health found in its 1935-1936 study of illness rates among men and women workers 15 to 64 years old that women experienced a higher illness rate in every age group, the difference increasing with age. Whether the variation has a physiological basis or not, it indicates need for special protection for women.

The extent to which this sex variant applies to specifically industrial diseases is not known. But it is fully proved that women are more susceptible to certain industrial poisons, the best known being lead; and that the reaction of women to even slight benzol exposure may be extremely severe and is likely to take a form different from the reaction of men. Dr. Alice Hamilton states that evi-

dence shows young women to be particularly susceptible to poisons attacking the nervous system, such as carbon disulphide. We know too that pregnancy may aggravate and accelerate industrial poisoning.

Types of Cases

Reports of industrial illness and poisoning among women include, during the past 10 years, cases in the following list, which indicates the types of exposure women in industry face.

1. Skin infections caused by contact with several hundred different agents, including cleaning agents, dyes, miscellaneous chemicals, oils and greases, vegetables and fruits, rubber, plastics, metals, chlorinated naphthalene.
2. Synovitis and bursitis from repetitive activity.
3. Lead poisoning.
4. Volatile solvent poisoning, including benzol, carbon tetracloride, and wood alcohol.
5. Radium poisoning.
6. Chrome ulcerations.
7. Silicosis, asbestosis, and industrial tuberculosis.
8. Zinc poisoning.
9. Carbon monoxide poisoning.
10. Mercurial poisoning.
11. Arsenic poisoning.
12. Dinitrophenol poisoning.

In addition to these specifically industrial poisons, cases such as the following were traced directly to occupational contacts: Tularemia (restaurant cook); tuberculosis (nurses); heat prostration (cleaning and dyeing); contagious diseases (nurses, teachers).

Revealing Studies

Evaluating exposures that might

Girl working on production line in turning out needed National Defense products. She is gaging and weighing .50 caliber ball cartridges.

OEM defense photo

result in disease, the Pennsylvania Division of Industrial Hygiene studied 16,000 industrial plants and found over 4,500 exposures of women to lead or lead compounds, 7,300 to inorganic nonmetallic dusts, and 228,000 to organic dusts. A similar study in Illinois by the Illinois Division of Industrial Hygiene included 50,000 women. Of every 100 women employed, 59 were exposed to some harmful substance. Among the manufacturing industries, the largest proportion of exposures of women per 100 employed was found in iron and steel, machinery and vehicles (85 per 100). This is followed by food (84 per 100) and chemical and allied industries (84 per 100). Dr. Kronenberg, chief of the Illinois Division, points out that though women's work is light the "exposures are still as great and as frequent, the duties highly repetitious, with factors of monotony, fatigue and others—all of which are definite industrial health problems."

Occupational diseases are subtle. A woman may suffer from some industrial exposure for years before the effects become obvious and actually prevent her employment. Frequently an employer uses material labeled only with a trade name, the chemical properties unknown to the user.

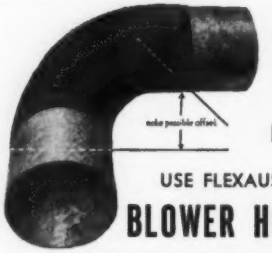
The withdrawal of some chemicals for defense purposes will mean substitution of other chemicals, some less known in their action on the human body, others known to be more hazardous. An illustration is the probable increase in the use of benzol, since the supply of toluol is needed in TNT manufacture. Toluol had been widely substituted for the more dangerous benzol in leather, rubber, and other industries.

Hazardous processes employing women are expanding rapidly. An example is dial painting with radioactive paints. In peacetime about 100 have jobs in this woman's occupation in New York State, a center for such work. In the summer of 1941 about 2,500 were so employed. These paints are used on aeronautical instruments and further expansion may be expected.

Substitutions Possible

The action on the problem in the case of radium is indicative of what can be done to insure safe handling of industrial poisons. New York State authorities brought together in a committee persons concerned with radium poisoning to formulate a code for the use of this substance. The committee further planned methods for the education of employees as to necessary precautions.

Advance in another industry has been noted recently. Prohibition of



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the use of mercury in the preparation of hatter's fur or the use of fur so treated in the manufacture of hats has been approved by state authorities in the five states where mercury poisoning has occurred: Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania. The conference bringing about this agreement was called by the Surgeon General of the United States Public Health Service and substitution of nonmercury compounds was urged by both employers and employees participating.

Employers' Stake

Both employers and workers must become safety conscious in the field of preventing disease and poisoning. State labor departments and industrial hygiene divisions, such as exist in 31 states, are cooperating toward that end. It is of prime importance that this work be expanded, to foresee and prevent increasing disability from unhygienic conditions in industry; that it be carried on in every state; and that these divisions be adequately staffed and furnished with sufficient laboratory facilities. Through these agencies new materials can be analyzed and technical advice given as to adequate protection.

Employers have recognized their stake in the health of workers and in increasing numbers are including medical staffs in their establishments. The pre-employment physical examination has come into general use in some industries. With proper safeguards of workers' rights, careful physical examinations can make it possible to suit the worker to the job. Moreover, they can reveal slight correctable defects that would predispose to diseases such as need not develop if healthful employment conditions are provided.

Of greatest importance in building up resistance to disease of occupational as well as general origin is proper nutrition and the prevention of chronic fatigue. Studies have shown that the well-nourished adult can withstand exposures that disable poorly-nourished workers. Early studies of lead poisoning give some evidence that the excessive sickness of women workers was due to their relatively poorer state of nutrition. The women were paid lower wages than men, and their food budgets were on a lower scale. The evidence of the World War period shows that good facilities for lunch at cost prices, and sufficient time to eat, are insurance against ill health. Some employers have had amazing results in lowered sickness rates by furnishing vitamin tablets to workers, or by supplementing the diet with milk or cod liver oil.

PLANT DOCTORS

Say cleanliness helps prevent industrial dermatitis. For further details write to **Lightfoot Schultz Company, 663 Fifth Ave., New York.**

How to Prevent Strains and Sprains

By Dr. S. DeHart, R. K. LeBlond Machine Tool Co.

OUR records show that by far the greatest loss of time is due to strains from improper lifting. Falls or the dropping of objects on the feet and legs, are the next important causes of lost time. The fingers are the most exposed part and are more often injured slightly, while the legs and feet are most frequently seriously injured by falling objects.

The abdominal and back muscles are the most vulnerable to strains and ruptures. It seems that some feet are positively magnetic when it comes to attracting heavy objects to them, and some backs were never designed for the machine shop.

Fig. 1—Dangerous Method of Tightening Nut

In Fig. 1 is illustrated a common cause of injury to the hand. It is a dangerous method of tightening a nut. Fig. 2, shows the right method.

Fig. 2—Correct Method of Tightening Nut

Fig. 3 shows a dangerous position of the hand. When the hands are kept on the outside of all movable parts, hand injuries will

Fig. 3—Endangering the Hand

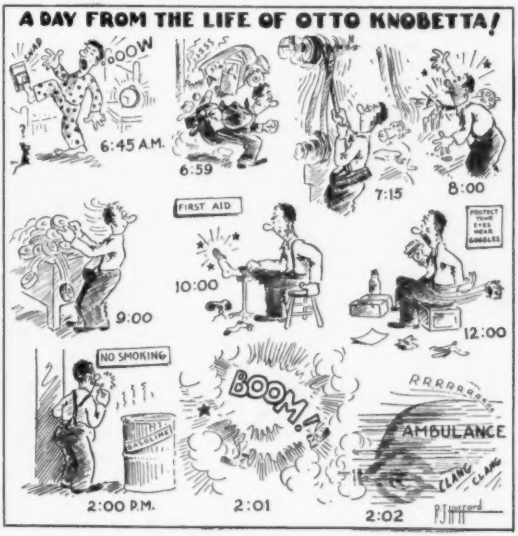
be few and far between.

Fig. 4 shows a very bad bracing position. Almost anything is liable to happen in this position. A rupture, a sprained back or even a fractured skull is in the making when one is working in this position.

Fig. 4—Bad Bracing Position

Fig. 5—Correct Method of Lifting

In Fig. 5 is shown the proper method of lifting. The procedure is simple in preventing these injuries.



Cartoons of this nature help drive home the safety story.

Courtesy Farmall Works, International Harvester Company.

Timely News!

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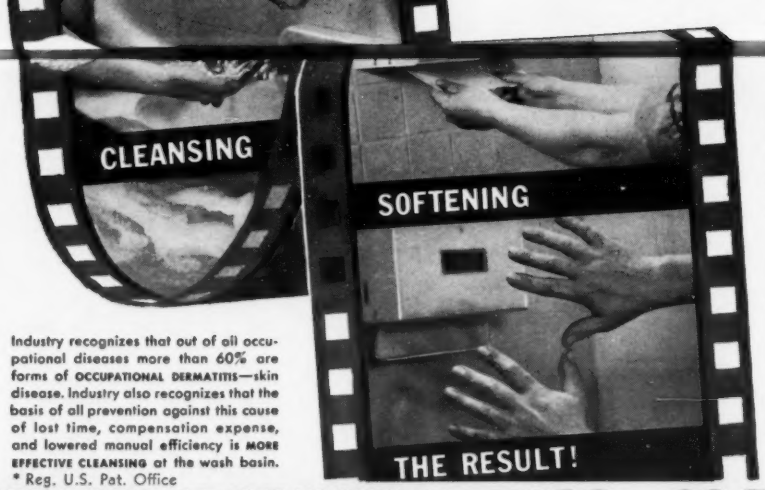

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. . . While removing embedded grease and grime it softens and coats the skin with lanolin oil—a basic aid in helping to prevent **OCCUPATIONAL DERMATITIS** since **LAN-O-KLEEN** does not tend to dry the skin. Its use is a sound industrial economy in these busy days.

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* Reg. U.S. Pat. Office

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Right off the Docket

The trend of litigation on workmen's health and accident compensation is reflected in these briefs of the latest and most representative cases coming to trial in the intervals between issues. Familiarity with this trend is important to every industrialist.

Unusual Strain Causes Blood Clot and Death

The decedent employee, 37 years old, strong and vigorous, was working on a well with his helper. They lowered into the well a 35 foot pipe and cylinder weighing 193 pounds. When the top of the pipe had been lowered to the top of the well pit they kneeled upon planks in order to lower the pipe still more. Difficulties were encountered in fastening the pipe at the bottom, and the men had to support the weight in their strained position for some five to seven minutes. The deceased employee at the conclusion of this task felt dizzy and complained of a headache. His lips turned blue and he was perspiring. This event took place on a Friday. The employee did light work the rest of the day and the following day, complaining during this time that he did not feel well. Sunday, while visiting friends he felt worse. He had pain in the chest, couldn't catch his breath, was pale and blue around the mouth. He was rushed to a doctor, but collapsed and died on the way.

The death of this employee was found to be due to occlusion or stopping up of the mouth of the left coronary artery by a blood clot. It was held that the unusual strain experienced in lowering the pipe and cylinder caused the clot and resulting death. An award was granted.

Reynolds vs. *George & Hoyt et al* (Iowa) 300 N.W. 530 (Nov.-1941)

Employer Furnished Safe Place to Work

In this case the claimant had been awarded a 15% increase of compensation on the ground the employer violated the "safe place statute," that is, that the employer had not taken all necessary steps nor installed all proper equipment to make the employment safe. The facts of the accident were: The employer was spreading cotton and wool stock in a bin when he was severely burned when a sudden flash-like fire enveloped him. The cotton and wool stock was delivered to the bin by means of a blower system.

Not Liable

The evidence showed that this mill had been in operation 40 years and had never experienced an explosive fire. Those in charge of the operations of the mill testified that they had never heard of a like experience in any other mill. The appeal court reversed the decision which had granted the additional 15% award. It said that an employer cannot be held liable for failure to provide a safe place to work unless he has notice, actual or constructive of the existence of conditions that render the place of work unsafe. This accident being of a wholly unusual nature, and without the experience of the company, it could not have avoided it.

Voll vs. *Industrial Commission* (Wisconsin) 300 N.W. 772 (Nov.-1941)

Ill-Fitting Safety Shoe Leads to Infection and Foot Amputation

The employee was employed as a core maker in a foundry. His job consisted in making cores of sand, rounding them, heating them until they became hard, and then dressing them off. In this work the employee wore safety shoes to prevent his toes from being mashed by falling clamps and plates. He had been wearing a pair of safety shoes for about a month without feeling any discomfort when one day he suddenly felt a burning or pinching sensation on one of his feet. Examination revealed a small red spot just back of the knuckle of the left toe. The doctor treated the sore spot as a "fungus infection," possibly a "malignancy." The infection of the toe spread and finally the employee's foot had to be amputated.

In granting an award the Court stated, the expressions "Injury by accident," and "arising out of and in the course of employment" as used in the Workmen's Compensation Act should be liberally construed in favor of workmen to carry out the humane and beneficent purposes of the Act. In this case the loss of a foot through infection resulting from irritation caused by an ill-fitting safety shoe was an unexpected, undesigned, fortuitous happening, or untoward event, in other words an "injury by accident" within the Compensation Act and therefore compensable.

Lynchburg Foundry Co. vs. *Irvin* (Virginia) 16 S.E. 2nd 646 (Oct.-1941)

Heavy Exertion Brings on Brain Hemorrhage

A construction foreman who suffered from high blood pressure was engaged one day in breaking a concrete wall with a heavy sledge hammer. The foreman had slipped from a box a few days before and since that time had not been feeling well. While using the sledge hammer the foreman became sick suddenly, leaned over the wall he had been working on, and fell to the floor. He was picked up and removed to a hospital. The foreman was found to be suffering from paralysis and hemorrhage of the brain. His death followed.

The facts related above were held to be sufficient to sustain a finding that an accidental injury was the producing cause of the death. A hemorrhage of the brain of a person, afflicted with high blood pressure, caused by overexertion from the use of a heavy sledge hammer on a concrete wall, within the course of his employment, constitutes an accidental injury in the course of employment.

Consolidated Underwriters vs. *Dunn* (Texas) 155 S.W. 2nd 431 (Oct.-1941)

Death of Miner Held Due to Natural Causes

The claim was made here that the exertion of shovelling coal ruptured an intestinal ulcer. The shovelling done by the miner on the day he suffered the injury was not any different than usually done by the employee. The Court held that the evidence required a denial of compensation for the death of this coal miner who died from fulminating peritonitis resulting from a rupture of a pre-existing ulcer in his intestine on the ground that the claimant failed to meet the burden of showing, beyond mere conjecture, that the miner's death resulted from an accident in the course of his employment rather than from the natural progress of the miner's pre-existing ailment.

The Court said further, that exertion incident to the performance by an employee of his usual work in the usual way, although work may be hard, is not an unusual or "overexertion," for purposes of determining employee's right to compensation for injuries claimed to have resulted from the exertion.

Royko vs. *Logan Coal Co.* (Penn.) 22 Atl. 2nd 434 (Oct.-1941)

Digested and Compiled by
HILTON E. ROBERTS
Member of the Ohio and
New York Bar

The CARE and CLEANING of HANDS and ARMS in INDUSTRIAL PLANTS

By Dr. R. W. MITCHELL, Technical Director
Magnus Chemical Co., Garwood, N.J.

Cleaning Up.

SAFETY directors, industrial physicians and insurance companies have all become concerned over the high incidence of industrial dermatoses. Available statistics from England and Germany before the War show figures not materially different from those for the United States. This data indicates that a factor of 65% may be taken as an approximate measure of the occurrence of industrial dermatoses in the complete list of compensable occupational diseases. Since these figures apply to the prewar period, it seems reasonable to assume that the rush of emergency production has increased them materially.

The literature of industrial safety has given much attention to the problems of prevention and protection from the viewpoint of poisonous, irritating or otherwise

harmful process materials, hazardous operations and unsafe surroundings, but it seems pertinent, in view of the fact that so much of the lost time and compensation due to occupational disease is caused by dermatoses, to give special attention to those parts of the body which are most frequently in contact with harmful substances or are exposed in other more frequent ways to the hazards which lead to dermatoses.

The hands and arms of industrial workers are not only exposed to more hazards but, because of the extent to which they are soiled during working operations, the problem of cleaning them becomes one deserving the full attention of those concerned with plant sanitation. This is true for many reasons, not the least of which is the danger of infections and damage caused by the use of unsuitable cleaning materials and methods. This series of articles concern themselves with this major problem of hand and arm cleaning. It also covers protection of hands and arms during working hours, not only to simplify the cleaning operation, but to afford any additional protection that may be provided against contact with harmful substances and against infection from cuts, abrasions and irritated areas of the hands or arms.

The Basic Problem

First—what is the problem of cleaning hands and arms in the industrial plant?

To make the issue clear, let us dispose at once of the confusion which follows any attempt to lump together the hand and arm cleaning problem of the office or the home with that of the plant. Except for the comparatively rare occasions when a typist or stenographer gets her hands very dirty in changing a ribbon or adjusting a mimeograph machine, the dirt on the hands of office workers is not heavy or difficult to remove. In the home, except when Dad (and once in a while Mom) investigates the interior mysteries of the car or vacuum cleaner—or perhaps undertakes a bit of painting, hands may seem dirty enough but are relatively easy to clean.

In the industrial plant, however, the dirt is not only more heterogeneous, including the almost invariable presence of grease or oil, but the dirt particles are always more deeply embedded and therefore much more difficult to remove. Industrial dirts, moreover, often tend to be more irritating or harmful, besides which they also harbor more bacteria or spores.

Of course there is a wide range in the degree of "dirtiness," depending on the type of work done. A lathe hand or a fleet garage mechanic gets very dirty hands and arms, with a great deal of grease and deeply embedded metal and dirt particles. This condition applies to metal and machine workers generally and is complicated by the inevitable scratches, abrasions and cuts which are usually factors, in cleaning and in the incidence of infections. Nor should the fact be overlooked that callous points on hands and fingers, developed by the motions and contacts of the job, are particularly troublesome in that cracks or abrasions tend to occur at the juncture

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MORTON SALT CO., Chicago, Ill.

between the calloused skin and the normal surface.

The hands of the battery repair man get very dirty—but he also has to face the added hazard of frequent contact with battery acid, resulting in skin surfaces which are extra tender and hence harder to wash safely. The whole problem of hand cleaning is always complicated where the worker has to expose the hands to acid, alkaline or other harmful fluids—including long exposure to water, with or without soap or added chemicals.

Nature of problem

Workers who assemble mechanisms have greasy, dirt-embedded hands and arms to contend with, as well as those who produce the parts. Those who lacquer-finish metals or other materials have a hard hand cleaning job to do, which is not solved by the use of solvents which are hard on the skin. In all these cases the tendency toward creating extra sensitive skin in many cases must not be overlooked. In short there is so wide a variety in the kind and extent of dirt encountered in industrial work, that it is impossible to classify it.

But it is possible to examine the nature of the cleaning problem imposed by these many kinds of dirt and to plan the specifications of a safe hand and arm cleaner which can not only meet the majority of conditions, but, by suitable modification and the provision of a moderate range of types, meet the inevitable condition of sensitive and extra sensitive skins. So let us take a good look at the chemistry and mechanics of skin cleaning, as far as it concerns the arms and hands.

Here is an extensive surface of the human skin, hairless and toughened chiefly on the palms of the hands, and relatively tender and covered with hair follicles everywhere else.

The dirt to be removed is never concentrated on the tough palmar surface, but is liberally distributed over the entire area. Let's not worry about the nature of the dirt too much, except to remember that it will usually be oily or greasy. And let us not overlook the inevitable presence of bacteria, spores and fungi in most of these dirt deposits.

How to remove this deposit? To take one extreme of the picture, it is conceivable that the dirtiest and greasiest of hands could be cleaned completely in time by persistent scrubbing in plain water. This is of course impractical and highly unsatisfactory. We must use some kind of cleaning agent to clean these skin surfaces, and naturally turn to soap.

Next Month Various Soaps Will Be Discussed

Directing Young Workers Into Safe Employment

By S. W. Homan and Saul Wallen, *Children's Bureau, U. S. Department of Labor*

There is a popular belief that injuries due to machinery constitute only a small part of the total industrial-injury picture. Regardless of the validity of this belief generally, machines used in the woodworking industries have been the source of a large proportion of the injuries occurring to workers in woodworking plants.

Woodworking machines have long been among the most hazardous machines in industry because they characteristically have sharp working or cutting edges and operate at high speeds. The injuries they cause are likely to be especially severe, often resulting in amputations or other permanent partial disabilities. In Massachusetts, for instance, during a 5-year period 18.5 per cent of the reported lost-time injuries due to woodworking machines resulted in permanent partial disabilities, whereas only 3.8 per cent of the injuries from all causes in the manufacturing industries resulted in this type of disability. Mechanical guarding cannot be relied upon to protect workers from woodworking-machine hazards because guards cannot be used consistently or continually.

To work at woodworking machines without undue danger of an injury one must possess a degree of experience, judgment, capacity for concentration, and caution not usually found in boys and girls under 18 years of age.

These reasons were the basis for the issuance of Hazardous-Occupations Order No. 5, effective August 1, 1941, declaring most power-driven woodworking-machine occupations to be particularly hazardous for minors 16 and 17 years of age. The occupations declared hazardous include operating power-driven woodworking machines; setting up, adjusting, repairing, oiling, or cleaning such machines; and off-bearing from circular saws and from guillotine-action veneer clippers where such off-bearing is done directly from a saw table or from the point of operation.

Employers of youth since their early days, the woodworking industries have tended to increase their employment of young workers as a result of the demand for new workers stimulated by the defense program. This seems to be especially true of box and basket factories and plants making light wooden articles and wood specialties. Order No. 5 serves to direct young workers into those jobs in woodworking plants that they can

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fill safely and to bar them from those jobs in which the risk of an injury is great.

Other orders

Two other Hazardous-Occupations Orders are now in effect. Order No. 2 has the effect of establishing 18 years as the minimum age for employment as a driver or helper on a motor vehicle. Order No. 4 declares logging and sawmilling occupations, with certain exceptions, to be particularly hazardous for minors between the age of 16 and 18 years. Both these orders were issued following investigation of the hazards of these occupations.

Field investigation has been completed, and consideration is being given to an order on occupations in the shipbuilding and repairing industry. Investigations are under way on the hazards of metalworking occupations, foundry occupations, and occupations involving the use of radioactive substances.

An impression may exist that the hazardous-occupations program is a backdoor attempt to fix 18 years as the minimum age for all employment. If it exists, this impression is entirely erroneous. The purpose of the program is to close to young people only those job opportunities in which the chances for an industrial injury are great. Its basis is the philosophy that young people should be protected until those qualities essential to safety and normally found in adults have had time to develop.

The coverage of the orders is limited by the fact that they are issued under the Federal Fair Labor Standards Act, and therefore apply only to employers who are engaged in the production of goods shipped or delivered for shipment in interstate commerce. However, employers must comply with any State law establishing a higher minimum-age standard.

How is an employer to know whether a boy claiming to be 18 or older is actually that age? The Fair Labor Standards Act provides a means whereby employers can protect themselves from unintentional violation of the child-

labor provisions of the Act. They are protected if they keep on file certificates of age for all minors claiming to be 18 and 19 years of age employed in occupations declared hazardous, as well as certificates for all 16- and 17-year-old minors in occupations not declared hazardous. In 44 States, the District of Columbia, Hawaii, and Puerto Rico such certificates are available through the State labor or education departments. In Idaho, Mississippi, South Carolina, and Texas the United States Children's Bureau issues certificates of age.

The Government's program of setting up barriers to the employment of young people in occupations or industries that are not reasonably safe has the effect of directing young workers into safe channels of employment. Far from materially reducing employment opportunities, this program assures to young workers a future free from the blight of a work injury. At the same time it serves to advance the cause of industrial safety by preventing the exposure of young people to unsafe working conditions. Now, more than ever before, everyone must be kept working.

Safety Record Interests New Official

Himself a veteran participant in many a civic enterprise and at least one safety campaign, Cloud Wampler, newly elected executive vice-president, Carrier Corporation, Syracuse, N.Y., comes by a keen interest in the welfare of his fellow employees, quite naturally. Here he is seen listening as Dr. Carrier explains the standings of various departments in Carrier's safety effort. At the time the picture was taken, the plant had a very commendable safety record—11 days had gone by without a time-lost accident.

Fatigue in Industry

By J. R. GARNER, M.D.
Atlanta, Ga.

INDUSTRY annually sustains huge losses directly attributable to fatigue. It is only when we study the insidious ways that fatigue may affect industry, and with its various avenues of entry, that we begin to realize the loss sustained thereby and all too frequently wrongly ascribed to other factors.

What Is Fatigue?

Fatigue is a combined psychological and physiological condition of the cells and organs of the body which have undergone excessive activity with a resulting loss of power. Biologically, there is an accumulation of the so-called "fatigue substances" within the body. This results in lowering of the worker's susceptibility to disease, decreasing his output, increased frequency of errors, and greater liability to personal injuries. Persons with a lowered vitality will exhibit in a man much shorter time than normal individuals. Fatigue invariably leads to a slumping posture which is directly responsible for retarding the respiratory, circulatory, and eliminatory functions of the body and favors accumulation within the body of products normally eliminated, as well as of fatigue substances.

Continued fatigue plays a large and important part in the inception and progress of disease. Those with low physical standards will exhibit fatigue much more readily than healthy persons. The average worker loses 10 days per year from sickness. And losses sustained from general illnesses are 15 times greater than losses due to accidents and occupational diseases. Recent literature is abundant with studies of decreased output due to fatigue, especially in wartime. Fatigued persons cannot produce as efficiently, regarding both quality and quantity, as those whose muscular and nervous energies have not been so taxed.

Another in a series on Industrial Health Defense compiled by the Air Hygiene Foundation

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Frequency of Errors

The writer has studied the time of occurrence of errors made by clerical forces and industrial workers engaged in routine and tedious tasks. It was found that as the day advanced errors increased with

the maximum occurring just before the close of the day. Obviously, the answer was FATIGUE.

An article, "Psychology of Accidents" in the Literary Digest of September 5, 1931, showed that among 1,300 accidents, 25% were caused, directly or indirectly, by fatigue. Considering that in the United States there occur annually 17,000 deaths, 75,000 permanent disabilities, and 1,400,000 temporary disabilities—a total of approximately a million and one-half injuries—and that one-fourth (25%) of these may be attributable to fatigue, it is easy to realize the enormous drain that fatigue alone makes upon employees and employers. That these stupendous losses admit of a great reduction is obvious. It may not be possible to completely eradicate fatigue from industry, but it certainly can be greatly reduced.

Fatigue Reduction

Here are eight rules for fatigue reduction:

1. ***Physical Examinations*** — Applicants for employment should be given complete physical examinations. All employees should be given periodic re-examination.
2. ***Environments***—Careful attention must be given to our off-the-job surroundings, including home, hygiene, food, relaxation, and entertainment.
3. ***Diseases***—The periodic re-examination will from time to time bring out the incipiency of some disease which, when detected early, can be either completely eradicated or at least arrested. This prolongs our productive life.
4. ***Adaptability***—Great care should be exercised in assigning a worker to tasks for which he is adapted. When an employee is found misfitted to his work he should be transferred to some other task.
5. ***Working Hours***—Adoption of a given number of working hours for all occupations will not always lessen fatigue. Consideration should be given to the amount of routine and monotony connected with the task.
6. ***Rest Periods***—Rest periods during working hours have been found productive of much good.
7. ***Surroundings***—Attention should be given to the working surroundings of employees, especial attention being given to ventilation, light, heat, and noise.
8. ***Posture***—The Gilbreth International Committee on Industrial Fatigue has conducted extensive studies on Industrial Seating in connection with Fatigue. The Committee placed great stress on the harmful effects of improper posture upon the world's industry. They emphasized the importance of adoption and use of chairs constructed along anatomical lines, and completely adjusted to the individual worker.

The LITERATURE Library

A listing of data available, without cost, to help you in maintaining a health and safety program.

Eye, Foot, Hand Protection—First Aid

No. 01—CORD-ON-END-SOLES—Pamphlet shows how looped cord-on-end structure makes soles more rugged and safe. Panther-Panco Co.

No. 02—FACE SHIELDS—Circular illustrates and describes 36 types of face shields for dust hazards, welding operations and general hazardous work. Boyer-Campbell Co.

No. 03—SPEED FRAME GOGGLE—Sheet points out goggle with automatic position feature. A simple nod of the head positions the goggles. Mine Safety Appliances Co.

No. 04—EYE PROTECTION—Eight page booklet lists a variety of goggles, lenses, spectacles and goggle accessories. Mine Safety Appliances Co.

No. 05—SKULLGARDS—4 page bulletin lists 7 different head protective products. Actual endorsements detailed. Mine Safety Appliances Co.

No. 06—EYE PROTECTION CATALOG—Outline indicates eye hazardous industries, operations and the type of goggle best suited to handle the problem. American Optical Co.

No. 07—"HOW TO FIT GOGGLES"—4 page bulletin tells how to fit goggles and gives tips for maximum performance. American Optical Co.

No. 08—GLOVES—Information on cowhide welding gloves. Double stitched and fully reinforced. American Optical Co.

No. 09—SAFETY SHOES—"The Whole Story" is the name of a 21 page booklet giving data on safety shoes, their application and use. International Shoe Co.

No. 010—KNEE PADS—Sheet illustrates knee pads to be used for those required to work in a kneeling position. Mine Safety Appliances Co.

No. 011—EYES ARE EXPENSIVE TARGETS—16 page booklet brings the matter of eye protection down to a dollars and cents story. Effective as a management tool. American Optical Co.

No. 012—TOP-SIDER SOLE—Sheet describes squeegee action of safety sole. Will grip any surface. Sperry Top-Sider Co.

No. 013—PACKAGED FOOT SAFETY PLAN—Liberally illustrated book gives full information about a new plan for the distribution of safety shoes. Thom McAn Shoe Co.

No. 014—SAFETY SHOE CATALOG—Is a complete buying guide to a broad selection of safety shoes. Full details on construction and recommendations for specific hazards are included. Lehigh Safety Shoe Co.

No. 015—FIRST AID KIT—4 page bulletin talks about dust proof and weather proof first aid kits. Contents of kits given. Mine Safety Appliances Co.

No. 016—SALT TABLETS—Pamphlet reprints article "Keeping in Condition by Using Salt." Prices and full details given. Morton Salt Co.

No. 017—EAR DEFENDERS—4 page booklet refers to ear defenders that reduce the sound level in noisy locations to about 1/10 of the former level. Points out possibility for greater efficiency. Mine Safety Appliances Co.

Sanitation—Good Housekeeping

No. 100—INDUSTRIAL UNIFORM SERVICE—Pamphlet points out a plan whereby soiled garments are exchanged for freshly laundered ones at no inconvenience and with profitable results to the user. Cleveland Overall Co.

No. 101—SCOPE OF SANITATION—64 page book is a treatise on the many chemicals, products and equipment that provide for a sanitary, healthful plant. Handy guides are included. West Disinfecting Co.

No. 102—GROUP WASHING EQUIPMENT—Catalog No. 4010 details various kinds of washfountains, group showers, includes engineering layouts. Drinking fountains and properly planned washrooms also discussed. Individual bulletins on washroom layouts and pictorial applications also available. Bradley Washfountain Co.

No. 103—INDUSTRIAL DERMATITIS—40 page book includes a scientific report on industrial skin diseases. Products for prevention are outlined. Milburn Co.

No. 104—ATHLETE'S FOOT PREVENTIVE—Circular lists user experience with athlete's foot treatment and offers 60 day trial. Onox Co.

***TO GET FREE COPIES** of material described on this page write to OCCUPATIONAL HAZARDS, 812 Huron Rd., Cleveland, Ohio, giving the individual number of the pieces desired.*

No. 105—HAND CLEANER—Pamphlet is a "question and answer" account of how this industrial cleaner is being used effectively by industry. Individual circulars for specialties are available. West Disinfecting Co.

No. 106—FLOOR SCRUBBING MACHINES—4 page bulletin describes a machine that scrubs, polishes, sands, etc., as interchangeable attachments are used. Hild Machine Co.

No. 107—PAPER CUPS—Information regarding the need for paper cups in industry. Free offer made. Lily Tulip Cup Corp.

No. 108—FOOT POWDER—Athlete's Foot powder is furnished in either white stainless form or a slight tracer form. Remains stable in solution. C. B. Dolge Co.

No. 109—SKIN CLEANSER—Generous free trial supply of industrial hand soap is made. Circulars containing specific information available. Sugar Beet Products Co.

No. 110—POWDERED HAND SOAPS—Soap available in various consistencies for specific job. Descriptive literature issued. Lightfoot Schultz Co.

Plant Protection—Maintenance

No. 200—PLANT PROTECTION FOR DEFENSE—Modernized manual of rules, regulations and instructive information to guide watchmen, guards and supervising personnel. Detex Watchclock Corp.

No. 201—SLING CHAINS—4 page catalog sheet details safe working loads, gives dimensions and offers a buying guide for sling chains. McKay Company.

No. 202—INDUSTRIAL WIRE ROPE—96 page catalog contains specific recommendations as to the constructions best suited for various types of cranes and industrial equipment. Broderick & Bascom Co.

No. 203—FLOOR FINISH—Catalog page describes penetrating floor finish that provides an attractive surface as well as preservation of the floor. Truscon Laboratories, Inc.

No. 204—UNIT HEATERS—36 page catalog points out the advantages of unit heaters, gives helpful engineering data including tables, illustrations and piping diagrams. Ilg Electric & Ventilating Co.

No. 205—FLOOR MAINTENANCE—30 page booklet refers to specific material that can be used for properly maintaining all types of floors. Thoroughly detailed and a valuable maintenance manual. West Disinfecting Co.

No. 206—FLOOR PRESERVATION—Literature on floor scrubbing machines indicating safety and maintenance features. Data on products such as waxes, finishes, etc. available. Finnell Co.

No. 207—INDUSTRIAL VITAMIN PLAN—Detailed account of how vitamin pills are now available to industry. User experience listed. Industrial Vitamin Corp.

Protection Against Dusts, Fumes, Gases

No. 300—DUST COLLECTING SYSTEMS—Spiral bound book is both a word and picture presentation of industry's acceptance of skillfully engineered dust control systems. Various accessory equipment detailed. Kirk & Blum Mfg. Co.

No. 301—VENTILATING EQUIPMENT—Catalog page describes ventilating apparatus that is designed to remove various harmful fumes and vapors. Recorded air changes, diagrammatic sketches included. Autovent Fan & Blower Co.

No. 302—INDUSTRIAL DUST CONTROL—20 page book is a discussion of the basic principles applied to the solution of industrial dust problems. Inserted questionnaire can be used for individual cases. W. W. Sly Mfg. Co.

No. 303—PORTABLE VACUUM CLEANING—6 page bulletin points out the places where vacuum cleaners can be effectively used in industrial operations. Free demonstration available. Hild Machine Co.

No. 304—AIRLINE RESPIRATOR—Bulletin CS-6 points out use for an airline respirator with cartridge filter. Auxiliary attachments outlined. Mine Safety Appliances Co.

No. 305—OXYGEN BREATHING APPARATUS—Material descriptive of 2 hour, 1 hour, and ½ hour oxygen breathing apparatus that provides for various periods of respiratory protection. Bulletins are BB-1, BM-2, BC-2. Mine Safety Appliances Co.

No. 306—FUME AND GAS INDICATORS—Catalog sheets and bulletins referring to indicators for benzol, combustible gas, carbon monoxide and hydrogen sulphide. Recorders for oxygen, methane and electrostatic dust and fume sampler also have descriptive data. Mine Safety Appliances Co.

No. 307—PURAIR HELMET—4 page bulletin No. 97 describes a helmet particularly applicable in sand blast operations. W. W. Sly Mfg. Co.

No. 308—DUST COLLECTORS—Bulletin No. 903 describes engineering features available in this dust control equipment. Includes recommendations, specifications and list of users. Pangborn Corp.

No. 309—QUESTIONS AND ANSWERS CONCERNING DUSTS—16 pages of questions and answers are devoted to explaining in non-technical language the problems that continually arise regarding the nature and effects of dust. Mine Safety Appliances Co.

No. 310—FANS AND BLOWERS—Catalog 220 contains engineering data, pictures and details on multiblade fans. Literature on propeller fans, fans for high temperatures also. Garden City Fan.

No. 311—VACUUM CLEANING—"The Menace of Dust" is a circular that points out uses for heavy duty vacuum cleaning equipment in industry. Adjustments and tools for greater efficiency are discussed. U. S. Hoffman Machinery Corp.

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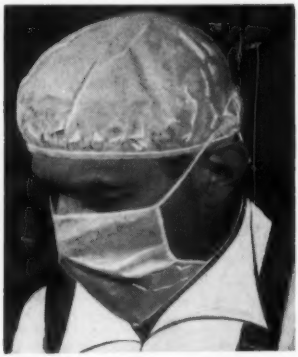


from light work dusts, powders, lint, etc. Can be boiled for repeated use and are available in two sizes. The mask is for use only in light dust operations and is medicated. Samples are available.

CIRCUIT INTERRUPTER FOR HAZARDOUS LOCATIONS—For disconnecting or interrupting a-c and d-c circuits in Class 1 Group D locations where atmospheres contain gasoline, alcohols, natural gas and other explosive vapors, a new non-automatic circuit interrupter is announced by Westinghouse Electric and Manufacturing Company.

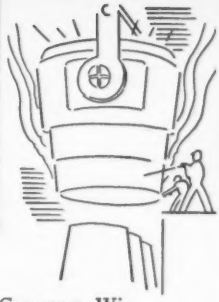
Manually operated, the De-ion circuit interrupter is furnished with a NEMA type 7 cast enclosure finished in aluminum with a closely ground fit between box and cover. Resistance to explosive pressures of hazardous atmospheres is assured by the heavy walls and strong fastenings.

Designed for 250 to 600 volts on a-c circuits and 125 to 250 volts on d-c circuits, the units are rated from 50 to 600 amperes depending on the frame sizes. Interrupting capacity is 5,000 to 10,000 amperes.

IDENTIFY EMPLOYEES — Positive identification of plant employees is made possible by use of Royal Emblems photographic identification badges with an exclusive "Curl-Close" back. Already in use in defense plants over the country these popular badges cannot be opened without being destroyed. They come in two parts—front section with transparent window and back section with joint pin and safety catch.

Royal manufactures several different types of such badges and some come with wider border embossed with user's name, while others have the narrow type plain border in which case company's name appears on photograph inside window. Variety in size and shape of window affords distinctive use of company name, trademark, number and colors to differentiate departments. The company also makes a complete line of celluloid number badges for temporary use and for plant visitor use.

NONCORROSIVE OIL-IMMERSED STARTERS—Two new low-voltage oil-immersed starters, especially designed to resist the corrosive fumes commonly present in chemical



plants and refineries, have been announced by the General Electric Company, Schenectady, New York. Designated CR7008 and CR7006, these wall-mounted starters feature a heavy, corrosion-resisting, cast-iron head supporting the mechanism and oil tank.

Several safety features are embodied in the combination starter. The enclosing tank cannot be lowered while the circuit breaker is ON; the operating handle for the circuit breaker can be padlocked in either the ON or OFF position, preventing operation by unauthorized persons; the manual circuit breaker, designed for operation under oil, has a rating of 10,000 amperes interrupting capacity to protect the motors, starters, and personnel from injuries caused by short circuits.

NEW BOOK—"Outlines of Industrial Medical Practice" by Howard E. Collier, M.D., Ch.B. The object of this book is to provide for part-time works doctors, examining surgeons, practitioners and Medical Officers of Health a comprehensive survey of modern industrial medicine. It is divided into four sections: Industrial Hygiene, Industrial Psychology, Industrial Diseases, and Industrial Forensic Medicine. The earlier chapters deal with the doctor's executive duties, whilst the latter parts deal with his advisory functions.

MATERIAL HANDLING NEWS—A new, completely motorized roll grab has been developed by the Cleveland Tramrail Division of The Cleveland Crane & Engineering Company, Wickliffe, Ohio, for use with its overhead materials handling systems.

The grab will handle rolls from 16 inch minimum to 60 inch maximum diameter in lengths up to 72 inches and weighs up to 5000 pounds.

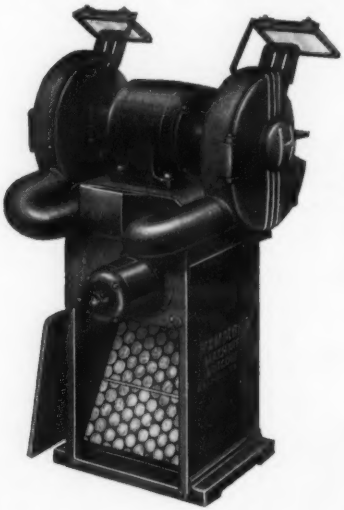
All motions of the grab are motorized and can be controlled from the crane operator's cab. Three motors are provided. One motor spreads and retracts the grab arms. Another squeezes the roll grippers after they have been brought close to the roll, and thus securely locks the roll in position and prevents any possibility of slipping away and falling in transit. The third motor

operates the turn-over mechanism which makes it possible to pick up a roll in any position and place it in any other position. Thus a roll piled vertically can be picked up and placed in a horizontal position.

The grab is especially suitable for the handling of all grades and thicknesses of paper, from light crepe and tissue paper, sound-deadening felt to kraft and hard box board. The grab, or variations of it, is suitable for handling bales, barrels, boxes, etc.

SWEATBAND—A new lightweight absorbent sweatband, made of synthetic sponge, is announced by the American Optical Company, Southbridge, Mass. The sponge is 7½" long, covers a generous width of brow. The sweatband can be sterilized, used again and again. It keeps sweat out of eyes and off goggles, thereby keeping vision clear so that foundrymen, welders, and other workers on hot jobs won't get blindly into harm's way.

GRINDER WITH DUST COL-



LECTOR—A new compact unit, for tool and light snagging grinding with self-contained dust collector, has been announced by Hammond Machinery Builders, Inc., Kalamazoo, Michigan.

These new machines, feature the completely self-contained dust collector. The dust collector unit is mounted inside the base of the grinder. The only parts outside are the fan motor, connecting pipes from wheel guards to dust collector, and air exhaust vent-guard.

The filters of fiber glass, three in number, provide the air cleaning medium. Because of the shape of the air ducts within the base, the heavier grinding particles are carried down to a compartment in the bottom of the filter housing, only the lighter particles and air go through the filters. The filters—in a sliding frame—are easily removed or replaced through the opening shown. Cover plate has been removed.

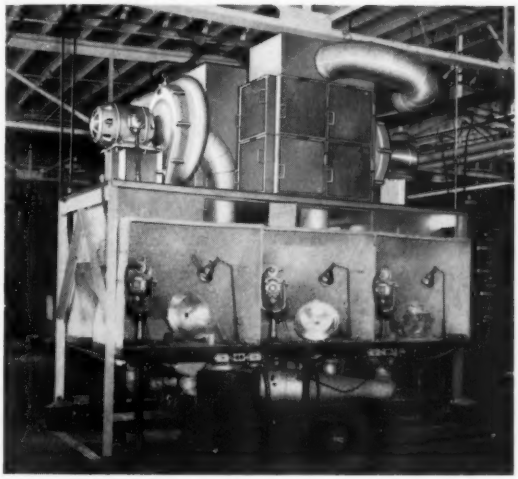
The OK Dust Collector is also built as a separate independent unit for use with other types of grinders that do not permit the use of filters within the base of the grinder.

FIRST AID KIT—A completely weatherproof first aid kit, known as the Bullard Weatherproof, is now available with a mounting bracket that permits the kit to be removed instantly and carried to the injured when necessary. It mounts to the wall or post in such a way that when the lid is opened it acts as a shelf for the treatments being used.

Contents are protected from the weather by a special "weatherstrip" rubber tube that also acts as a spring that opens the lid when the fastener is released. Contents are easily removed whether the kit is laying flat or wall mounted because the sides are lower than the individual packets of treatments, which furnishes plenty of finger room. A folder entitled "A Unit First Aid Plan" is available.

LYCOMING

PROTECTS GRINDING, BUFFING AND POLISHING OPERATIONS WITH AAF DUST CONTROL SYSTEMS



Standard Type D Roto-Clone combined exhauster and dust separator. Write for engineering data and Bulletin No. 272.

The Airmat Dust Arrester is designed for the collection of fibrous and flaky dusts. Available in all sizes to meet any air volume requirement. Bulletin No. 280.

Thirty-three AAF dust control installations protect grinding, buffing and polishing operations in the Lycoming motors plant. Equipment installed includes Roto-Clone Standard Type D units for belt polishers and grinders in the tool room, Self-Contained Roto-Clones with after cleaners serving Kellerflex grinders throughout the assembly floor, and Airmat Dust Arresters serving buffing operations for finishing connecting rods, master rods, crank shafts, cylinder heads and propeller hubs. There's an AAF product designed for every dust control need. Write for descriptive bulletins. Address 365 Central Ave.

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